

## Federal Communications Commission

FCC 95-71

FCC MAIL SECTION

Before the  
Federal Communications Commission  
MAR 31 10 38 AM '95  
Washington, D.C. 20554

ET Docket No. 92-28

In the Matter of

Amendment of Section 2.106 of PP-29, PP-30, PP-31,  
the Commission's Rules to PP-32, PP-33  
Allocate the 1610-1626.5 MHz  
and the 2483.5-2500 MHz Bands  
For Use by the Mobile-Satellite Service,  
Including Non-Geostationary Satellites

## SECOND REPORT AND ORDER

Adopted: February 24, 1995; Released: March 30, 1995

By the Commission:

## INTRODUCTION

1. By this action, we deny five pioneer's preference requests submitted by Constellation Communications, Inc. (Constellation), Ellipsat Corporation (Ellipsat), Loral Qualcomm Satellite Services, Inc. (LQSS), Motorola Satellite Communications, Inc. (Motorola), and TRW Inc. (TRW). These parties requested a pioneer's preference for their proposals with regard to non-geostationary (low-Earth orbit, or LEO) mobile satellite service (MSS) systems.

## BACKGROUND

2. The pioneer's preference rules were established to reward a party responsible for significant innovations that relate to communications technology and service.<sup>1</sup> These rules ensure that innovators have an opportunity to participate either in new services that they take a lead in developing or in existing services to which they wish to apply new technologies. In the *Pioneer's Preference Report and Order*, we stated that pioneer's preference will foster the development of valuable new technologies and services and improve existing services by reducing for innovators the delays and risks associated with the Commission's allocation and licensing processes. We further stated that a significant reward should be given to encourage innovators to present their proposals to the Commission in a timely

manner.<sup>2</sup> In the pioneer's preference review proceeding, we decided to continue to apply our existing pioneer's preference rules to proceedings in which Tentative Decisions have been issued.<sup>3</sup>

3. Under the rules adopted in the *Pioneer's Preference Report and Order*, each applicant for a preference must persuade us that its proposal is innovative, has merit, and that the applicant is the original developer of the innovation at issue. To be granted a pioneer's preference, an applicant must demonstrate that it has developed the new service or technology; e.g., that it has developed the capabilities or possibilities of the service or technology or has brought the service or technology to a more advanced or effective state. The applicant also must demonstrate the technical feasibility of the new service or technology, either by submitting a technical feasibility showing or having submitted at least preliminary results of an experiment. Finally, a preference will be granted only if the rules adopted are a reasonable outgrowth of the proposal and lend themselves to grant of a preference.<sup>4</sup> Pioneer's preferences are granted only for major innovations, and are not granted casually.<sup>5</sup>

4. In the *Tentative Decision* in this proceeding, we decided not to award a pioneer's preference to any of the five applicants proposing to establish LEO MSS systems.<sup>6</sup> We were unable to discern a significant innovation in any of the five proposals that would warrant a preference grant. In each case, the technology relied upon to show innovation appeared to have been used on existing satellite systems. Specifically, Constellation's proposal to use micro-satellites and a dynamic receiver; Ellipsat's proposal to use elliptical orbits, seamless interconnections and spread spectrum technology; LQSS's proposal to use spot beams, smooth call hand-off, and a pilot channel for synchronization with gateway stations; Motorola's proposal to use a cellular design and spot beams; and TRW's proposal to use high elevation angles were found to be based upon existing technologies. Further, we found that none of the five applicants demonstrated the technical feasibility of their respective systems.

5. In the *Report and Order* in this proceeding, we allocated the 1610-1626.5 MHz (1.6 GHz) and 2483.5-2500 MHz (2.4 GHz) bands for MSS use on a co-primary basis with the existing Radiodetermination Satellite Service (RDSS).<sup>7</sup> We also deferred a final decision on the pioneer's preference requests until completion of the first phase of our pioneer's preference review proceeding.<sup>8</sup>

## DISCUSSION

6. Comments to the *Tentative Decision* were received from several parties. However, only Motorola contests the tentative denial of its request. A discussion of each request follows.

<sup>1</sup> See *Report and Order (Pioneer's Preference Report and Order)*, GEN Docket No. 90-217, 6 FCC Rcd 3488, 3494 [at para. 48] (1991).

<sup>2</sup> *Id.* at 1, 18.

<sup>3</sup> See *First Report and Order*, ET Docket No. 93-266, 9 FCC Rcd 605 (1994). Subsequently, we required that recipients of pioneer's preferences in proceedings in which Tentative Decisions have been made pay for their licenses. See *Memorandum Opinion and Order on Remand*, ET Docket No. 93-266 and GEN Docket No. 90-314, 9 FCC Rcd 4055 (1994). In as much as we do not award any preferences in this proceeding, this recent change

is not applicable here.

<sup>4</sup> See 47 C.F.R. § 1.402.

<sup>5</sup> See *Pioneer's Preference Report and Order* at para. 48.

<sup>6</sup> See *Notice of Proposed Rule Making and Tentative Decision*, ET Docket No. 92-28, 7 FCC Rcd 6414, 6419-22 (1992) ("Tentative Decision").

<sup>7</sup> See *Report and Order*, ET Docket No. 92-28, 9 FCC Rcd 536 (1994).

<sup>8</sup> See *Notice of Proposed Rule Making*, ET Docket No. 93-266, 8 FCC Rcd 7692 (1993).

7. *Constellation (PP-29)*. Constellation requests a pioneer's preference for its proposed LEO MSS system that would provide new services including voice and data messaging to previously unserved areas and users. Specifically, Constellation's proposal is for a nationwide satellite service that would serve areas and people that do not have access to any telecommunications service. It maintains that its approach is innovative because it proposes: 1) micro-satellites that are designed as an outgrowth of other satellites that Constellation has pioneered for the U.S. military; 2) dynamic receivers; and 3) a new launch vehicle that enables satellites to be launched into orbit in a cost-efficient and reliable manner.

8. In the *Tentative Decision*, we concluded that Constellation's proposal merely combined existing technologies and did not constitute innovative achievements. We also noted that Constellation had neither demonstrated that its micro-satellite and dynamic receiver are unique, nor provided a technical showing to demonstrate that its design surpassed the state-of-art in satellite communications technology. Thus, we tentatively concluded that Constellation did not warrant a preference. No commenting party addressed the tentative denial of Constellation's request. Accordingly, we find no further basis in the record before us to indicate that an award of a pioneer's preference is warranted and therefore, we deny Constellation's pioneer's preference request.

9. *Ellipsat (PP-30)*. Ellipsat asserts that it was the first application for a LEO system in the RDSS bands. Specifically Ellipsat proposes to operate a nationwide mobile voice and position determination service via small low-Earth orbit satellites. It claims that as such, Ellipsat was the pioneer of using the RDSS bands for this new and expanded communications service. Thus, Ellipsat requests a pioneer's preference for its proposal for a voice and position determination LEO MSS system that would feature elliptical orbits. Ellipsat claims that its proposed system would be the first commercial use of elliptical orbits that optimize coverage over the United States. Further, it asserts that its code division multiple access (CDMA) spread spectrum technology will provide efficient spectrum use and facilitate sharing and multiple entry by other licensees. Ellipsat states its system will utilize "transparent interconnections" between ground and satellite stations resulting in a seamless communications network.<sup>9</sup> Ellipsat further claims that it will provide low-cost, high-quality voice service. Finally, it claims that it was the first to apply for a LEO MSS system in the 1.6 and 2.4 GHz bands.

10. In the *Tentative Decision*, we concluded that Ellipsat failed to meet its burden of demonstrating that its proposal is new and innovative. We found that the techniques Ellipsat proposes to use already exist in the satellite community and thus do not demonstrate an innovative contribution. We stated that elliptical orbits, relied upon by Ellipsat to demonstrate innovation, have been used by U.S. military satellites and the Russian Molniya satellite. Further, we concluded that Ellipsat had not demonstrated that it pioneered the use of "transparent interconnections" between ground and satellite components. Finally, we concluded that Ellipsat did not have a significant lead over the other preference applicants in activities such as concept

design and verifiable relevant experiments. Thus, we stated that it would be inappropriate to single out Ellipsat for a preference based on the timing of its submissions.

11. In comments to the *Tentative Decision*, Ellipsat supports our decision not to award any pioneer's preferences in this proceeding. Ellipsat did not submit additional information related to its own proposed system, stating only that if any preferences are awarded, it warrants a grant since it was the first to propose a LEO satellite system above 1 GHz. No other party commented on the tentative denial of Ellipsat's request. Accordingly, we find no further basis in the record before us to indicate that an award of a pioneer's preference is warranted and therefore, we deny Ellipsat's pioneer's preference request.

12. *LQSS (PP-31)*. LQSS requests a pioneer's preference for its proposed enhanced RDSS system that it states can provide data and voice transmission to hand-held portable transceivers and also provide position determination services. LQSS argues that its proposed system reflects substantial development of new system architecture and provides for multiple users and interoperability with the existing public telephone switched network. Further, it claims that its satellite system design using eight satellites per circular orbital plane, spot beams, smooth call hand-off, and a pilot channel for synchronization with gateway stations is innovative. Further, LQSS claims that its high system capacity accommodates thousands of voice and data users simultaneously. LQSS proposes to use CDMA spread spectrum technology that it developed and patented under its Qualcomm subsidiary. LQSS submits that all of these developments constitute innovations that satisfy the criteria for a pioneer's preference.

13. In the *Tentative Decision*, we found that LQSS's proposal offers no contribution to communications technology that is significantly innovative nor did its proposal offer anything new and innovative. We also tentatively held that its system design and spread spectrum technique are not innovations. Further, no party commented on the tentative denial of LQSS's request. Accordingly, we find no basis in the record before us to indicate that an award of a pioneer's preference is warranted and therefore, we deny LQSS's pioneer's preference request.

14. *Motorola (PP-32)*. Motorola requests a pioneer's preference for its proposed LEO MSS system that it contends uses an innovative cellular design and spot beam technology. Motorola states that in the case of cellular telephones, a static set of cells serves a large number of mobile units, whereas in its proposed system, cells would, in effect, move rapidly over the Earth while mobile units remain relatively stationary. Motorola claims that the unique elements of its system are its spectral efficiency and innovative design that include the use of inter-satellite links, a combination of frequency division multiple access and time division multiple access techniques, and bi-directional capabilities.

15. In the *Tentative Decision*, we concluded that Motorola's approach does not offer any significant improvements or innovations in service or technology. We found that Motorola's use of inter-satellite links and its concept of moving cells and spot beams have been utilized in earlier satellite systems and are thus not innovative.

<sup>9</sup> Ellipsat states that transparent interconnections will allow communications beginning and ending with its hand-held units,

but with access to other satellite systems, cellular radio systems, and the public switched telephone network.

16. In comments to the *Tentative Decision*, Motorola contends that its proposed system warrants a preference because it constitutes a significant innovation over existing communications technology. It argues that it was the first to propose the LEO concept above 1 GHz and is the only proponent proposing to provide universal service.<sup>10</sup> Motorola further states that it has invested \$100 million in research and development of its system and that this research will lead to establishment of a service not currently provided. Finally, it argues that we erred when we permitted a group of experts from other federal agencies to advise us on the merits of the requests without opening the results of this review to public comment. Motorola contends that this constituted peer review as contemplated by us when we established the pioneer's preference rules in Docket 90-217<sup>11</sup> and that we should have released the results of the experts' evaluations to the public for comment.

17. In reply comments, AMSC Subsidiary Corporation (AMSC), Constellation, and LOSS maintain that Motorola presents no information that was not available to us at the time of the *Tentative Decision*. AMSC maintains that Motorola did not demonstrate an innovation that justifies a preference and that we should not change our initial decision merely because we used an outside panel of experts to analyze the applications. Constellation asserts that we should not award Motorola a preference because Motorola has provided no technical basis to support its request. LOSS contends that granting Motorola's request would result in a monopoly because the bi-directional use Motorola proposes would preclude the operation of other systems in the same band. Ellipsat and TRW express support of our *Tentative Decision* to not grant any pioneer's preferences in this proceeding.

18. We agree with opposing parties that Motorola has presented no additional information to warrant award of a pioneer's preference. We conclude that Motorola has not demonstrated that its system is a significant innovation over existing technology. In particular, Motorola's use of inter-satellite links and its concept of moving cells and spot beams have been used in earlier satellite system designs. As we stated in the *Tentative Decision*, the U.S. military established inter-satellite link (crosslink) feasibility in 1976.<sup>12</sup> Further, moving cells and spot beams have been utilized by the Department of Defense on its satellites to improve coverage and provide frequency reuse.<sup>13</sup> We also disagree that Motorola was the first to conceive and design a LEO satellite system above 1 GHz. From the record, it appears that all of the pioneer's preference applicants were performing research and developing their proposals in approximately the same time frame.

19. Further, we find that even if Motorola's request appeared innovative, it still would not meet our pioneer's preference criteria because Motorola did not submit a technical feasibility showing of its proposed system prior to the *Notice of Proposed Rule Making and Tentative Decision* in this proceeding.<sup>14</sup> Rather, the information submitted by Motorola at that time was at the level of major spacecraft and ground segment systems and did not include the subsystem details necessary to establish technical feasibility.

20. Finally, with regard to the review performed by representatives of other government agencies, we disagree that this constituted peer review. These representatives were loaned on a "work-detail" basis, and they performed duties as Commission staff. The Commission obtained these employees using normal FCC personnel practices. Further, we follow this course of action routinely when we need additional resources or expertise in various matters. The purpose of their review was to provide independent analysis of the pioneer's preference requests, but not to perform peer review as discussed in the *Report and Order* in Docket 90-217. Therein, we contemplated soliciting assistance from either government or non-government experts who would not be functioning as Commission staff. We find nothing unfair in the Commission's use of employees on detail from other Government agencies to assist in the review of the various proposals.<sup>15</sup>

21. Accordingly, for the above stated reasons, we deny Motorola's pioneer's preference request.

22. *TRW (PP-33)*. TRW requests a pioneer's preference for developing a LEO MSS system that would use higher orbits to provide position determination, voice communications, and data services to mobile users. It claims that its proposed service is a significant and innovative new use because the provision of co-primary mobile voice and data services is not currently authorized in the 1.6 and 2.4 GHz bands. TRW states that its system combines the advantages of LEO and geostationary orbit (GSO) systems by providing low communications time delay compared to the delay associated with GSO systems, while using higher elevation angles than other LEO proponents to minimize obstruction by trees, buildings, and terrain. Finally, TRW states that its proposed system will provide inexpensive service to underserved segments of society, including emergency service providers, farmers, ranchers, truckers, and automobile, sea, and air travelers.

23. In the *Tentative Decision*, we concluded that although TRW's LEO system would take advantage of higher orbits, its proposal was not sufficiently innovative to warrant a preference. We found that TRW merely had balanced the relative advantages and disadvantages of LEO versus GSO systems.

<sup>10</sup> Motorola claims that its satellite system will permit subscribers to communicate using hand-held portable units from anywhere on the globe.

<sup>11</sup> See *Pioneer's Preference Report and Order*, at para. 50.

<sup>12</sup> *Tentative Decision*, at note 39.

<sup>13</sup> *Tentative Decision*, at note 40.

<sup>14</sup> Section 1.402 of our Rules states: "The applicant must accompany its preference request with either a demonstration of the technical feasibility of the new service or technology or an experimental license application, unless an experimental license application has previously been filed for that new service or technology." While Motorola did file an experimental license application in October 1991, that application was not granted until approximately the time of the *Notice of Proposed Rule*

*Making and Tentative Decision* in August 1992. Therefore, it was incumbent upon Motorola to submit an acceptable showing of technical feasibility prior to that decision. Section 5.207 of our Rules states: "In order to be eligible for a tentative preference award at the time of a notice of proposed rule making in a proceeding addressing a new service or technology, the experimental applicant must have commenced its experiment and reported to the Commission at least preliminary results, unless it has also submitted an acceptable showing of technical feasibility."

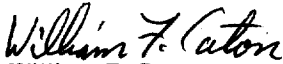
<sup>15</sup> We note that it is not Commission policy to place FCC staff analysis and studies, that are used in the decision making process, into the public record.

24. In comments to the *Tentative Decision*, TRW states that we pursued the most prudent and reasonable course in declining to award any of the applicants a preference. No other party commented on the proposed denial of TRW's request. Accordingly, we find no basis in the record before us to indicate that an award of a pioneer's preference is warranted and therefore, we deny TRW's pioneer's preference request.

**ORDERING CLAUSE**

25. Accordingly, IT IS ORDERED, That the pioneer's preference requests filed by Constellation Communications, Inc., Ellipsat Corporation, Loral Qualcomm Satellite Services, Inc., Motorola Satellite Communications, Inc., and TRW Inc. ARE DENIED.

FEDERAL COMMUNICATIONS COMMISSION



William F. Caton  
Acting Secretary